

by Sir John Lubbock, could have been generated in the circumstances, and of evidence, so far as we know, there is not a trace. Sir John Lubbock's theory of the origin of monandric marriage, exogamy, and the form of capture, also seems open to observation. He ascribes monandric marriage to the appropriation, in tribes without any marriage law, of captured women by individual captors; supposing that a captured woman, as she did not belong to the tribe, would be readily left with the man who took her; that envy of the superior felicity attained by captors would lead to a frequency of capture, until, at length, the possession of a captured woman became the ambition and hope of every man of a tribe; and that, there being no other way than capture of getting a wife of one's own, the custom of exogamy was in fact established, becoming a defined tribal law as capture, and therewith monandric marriage, became frequent, and thereafter surviving, as such customs do survive, when wives were got by purchase or exchange, with the capture symbolised. Among savages, however, women are no unconsidered trifles; and the proposition that, when captured, they would be freely left to their captors is so far from being self-evident that it might reasonably be deemed improbable, and certainly requires an amount of support which Sir J. Lubbock has failed to give it. But apart from this, it is, we are disposed to think, fatal to Sir J. Lubbock's hypothesis, that it overlooks the fact that captures of women are usually made by *parties*, not by single persons, and that it is a conflict between *parties* which, as a rule, is symbolised in the form of capture. In ascribing to the prevalence of the capture of wives the curious custom which forbids a father-in-law and mother-in-law to speak to their son-in-law—indignation at the capture being presumed to be the foundation of this rule of non-intercourse—Sir John, we venture to think, has certainly been hasty. At the time when the capture was real and the indignation of the father-in-law and mother-in-law real, their new relative would not have been much in the way of meeting them. He, with his wife, would have been in another tribe than theirs, and that a hostile tribe. Moreover, the same custom prevents a woman from speaking to her father-in-law, and operates, if we mistake not, in other cases also; and these Sir John's suggestion would not explain.

Our criticism shall extend to only one point more, and that is, the explanation offered by Sir John Lubbock of the origin of Totem worship. We notice it the more readily because, in this edition, he puts it forward with some appearance of hesitation. He thinks that the worship of animals may have arisen out of a practice of "naming first individuals, and then their families," after particular animals. "A family which was called after the bear would look on that animal first with interest, then with respect, and at length with a sort of awe." But does not this sound as if Sir J. Lubbock believed that the world began with the patriarchal family system? With it the transmission of a name through an individual, first to a family and then to a tribe, would offer no difficulty. It is necessary, however, to explain the worship of animals in tribes which acknowledge kinship through females only; in tribes in which children take the tribal name, not of their father but of their mother; and in which the family, still in an extremely undeveloped state, was probably altogether unknown at

the distant time when animal worship arose. In such tribes a man's personal name dies with him. Though he has his "medicine," it goes to no successor. It is the women, who, by the way, are without the "medicine," who transmit the totem. That names given to individuals, especially if the individuals were men, should diffuse themselves through tribes of this kind, and this in the case of an endless number of such tribes, appears altogether impossible. This, however, after all, only means that *we* cannot see how the thing can have happened; and, on the other hand, if Sir John Lubbock should find that in his theorising he has overlooked some of the most perplexing of the facts to be accounted for, he need not greatly grieve. He is entitled to reflect that, allowing for all shortcomings, his book has a sterling value and has done a most useful work.

KINAHAN'S "VALLEYS, FISSURES, FRACTURES, AND FAULTS"

Valleys, and their Relation to Fissures, Fractures, and Faults. By G. H. Kinahan, M.R.I.A., F.R.G.S.I. (London: Trübner and Co.)

WHENEVER a new explanation of natural phenomena is offered to the public, its advocates, assuming that due importance will be still assigned to the forces to which formerly all had been attributed, frequently seem to ignore them altogether, and therefore other inquirers are generally found who take up the defence of the old view, though they often admit practically as much as is required by the new theory. Mr. Kinahan thinks that sub-aërialists, in explaining the present configuration of the country, have been in the habit of attaching too great importance to surface wear and tear, and of ignoring the effect of fractures produced by earth movements.

Any contribution of facts, well observed and clearly recorded and reasoned upon, is of value, whether or not we accept the deductions of the author. We are, however, unable to satisfy ourselves from the perusal of the work before us that the facts would have appeared to us as they appeared to the author—the references to localities where the evidence for faults and other phenomena may be seen are too vague, and the inferences seem very doubtful.

There are few who would not be prepared to agree with the statement "that the present valleys are not solely due to rain and rivers, but rather to that action combined with glacial and marine denudation, and that all were generally led by the breaks and faults in the rocks" (p. 181), if it means that we must not refer all valleys to rain and rivers exclusively, that denudation of any kind is apt to be directed by the greater or less resisting power of the material to be denuded, and that fractured work is more easily acted upon and denuded than solid work.

What we really have to do is to inquire in each special case which of the various agents have had most to do with the formation of the particular valley, lake, or other earth feature before us; and therefore, in discussing the relation between faults and valleys, we require something more definite than a reference to places, where, as the author says (p. 102), "some of what are here considered faults might possibly only be Silurian cliffs, at the base of which the Old Red Sandstone and limestones were

deposited, as the rocks strike with the line of fault ;" or a map, in which many of the faults upon which the form of a lake is said to depend are drawn altogether below the waters of the lake, and the direct evidence of their direction or even existence is not given in the text (p. 123, and pl. ii. p. 15). Again, anyone who wished to see for himself whether it was possible that "streams have run over polished, scratched, and etched surfaces of rock for ages without having been able to obliterate the ice-marks" (p. 87), could hardly be sure of finding the places referred to by the author from the vague description that they were "among the ice-dressed hills of Galway, Kerry, and Cork" (*ib.*)

We cannot see what right our author has to assume because the "outlines—river-valleys, lake-basins, and bays—occur in systems, the general bearing of which may be indicated by lines," that "if such systems are not caused by breaks in the subjacent rocks, they must be due to chance" (p. 99), when we know that other authors have appealed to this very same fact in support of the theory that the leading features of the country referred to are due to a body of ice moving from the N.E.

It does not seem unreasonable to suppose that valleys which appear to have been shifted (p. 175) may have been formed along lines of fracture or of softer rock which had been previously shifted, or were for any reason not opposite to one another.

That an unfinished plain of marine denudation should have an irregular margin (p. 177) does not prevent our believing that the sea can in time cut back most of the hard promontories as well as the softer rock, or arrest at a uniform level the sub-aërial action, which is reducing both hard and soft. That a river should deposit sediment on a slope at any part of its course, even out into the estuary (p. 187), seems to present fewer difficulties than the supposition that the rock débris resulting from the denudation of Loch Lomond was carried out through a hole in the bottom of the lake (p. 215).

Although, however, such statements lead us to distrust somewhat the author's judgment, we must allow that the work contains much that is useful and suggestive, and should be read by all who are engaged in the study of earth-sculpture.

OUR BOOK SHELF

The Cone and its Sections treated Geometrically. By S. A. Renshaw. Pp. 148. (London: Hamilton, Adams, and Co., 1875.)

"WHAT so intricate and pleasing withal, as to peruse and practise Apollonius's Conics?" The author of the present work has evidently the same admiration for this Old World writer that Burton had. He remarks of him that his work has apparently maintained its superiority over every subsequent treatise on the subject. Like Apollonius in one respect, Mr. Renshaw derives the sections from the Scalene Cone, and rebuts the possible charge of "considerable prolixity" by affirming his belief that "the reader will be well repaid for the time and patience expended in the investigation." Upon this point opinions will most likely differ. The subject, though of considerable interest to all minds of a geometrical cast, is yet only a subordinate one, and we question if many can find time in these days of "high pressure" for the extra time and patience demanded. However, the student need not so occupy

his time, for our author has also derived the principal well-known properties from the right cone independently. Further, he establishes a proposition by means of which the scalene-cone properties may be derived from the right cone.

We have, in former numbers of NATURE, given in our adhesion to the principle of deriving the properties of these curves from the cone, and so are glad to see that the latest work on the subject is grounded on this principle. Robertson (1802), following Hamilton (1758), takes as his fundamental proposition the following:—If there be four lines in the plane of a conic which are parallel, two and two, then the ratio of the rectangles under the segments from one point of section to the rectangles under the segments from the other point of section is constant. Mr. Renshaw builds upon the proposition that in the ellipse and the hyperbola the tangent at any point on the curve makes equal angles with the focal distances of the point (with modification for the special case of the parabola). These and the other primary properties are, as we have said, proved from the cone, and this "it is believed to a greater extent than in any previous treatise." A great portion of the work, however, is taken up with the treatment of the curves *in plano*, and here a fundamental proposition is that of the generating circle. The properties are neatly derived by this means. We should mention that the generating circle (which in a particular case becomes the auxiliary circle of modern treatises) is said to have been first employed in Walker's work on Conics (1794), and is thus defined: If we have a focus and corresponding directrix of a conic, and in the same plane take any point and from it let fall a perpendicular on the directrix, then the circle required is that described from the above point as centre with a radius equal e times the above perpendicular (e being the eccentricity of the curve). We have been thus explicit, as this circle appears to have dropped out of recent text-books. We must refer for application to the work under review. The subject is ably treated, and the book copiously illustrated by well-drawn figures (in most cases); these latter, however, have been sadly marred in the engraving. Indeed, it is matter of regret that the paper, the ink, and the engraving are of an inferior character. The work was printed at Nottingham.

A Whaling Cruise to Baffin's Bay and the Gulf of Boothia. By A. H. Markham, F.R.G.S., Commander R.N. With an Introduction by Rear Admiral Osborn, C.B., F.R.S. Second Edition. (London: Sampson Low and Co., 1875.)

COMMANDER MARKHAM has done well to issue a cheap edition of his attractive narrative at the present time. The author, in the summer of 1873, went out to Baffin's Bay in the whaler *Arctic*, with the deliberate intention of acquiring experience in ice-navigation; consequently from his book a reader is likely to obtain a better idea of the real nature of the dangers attendant on pushing through the frozen ocean, than from a book whose chief aim is to narrate discoveries. Commander Markham, it is evident from the work before us, took such excellent advantage of the opportunities afforded him while cruising about in the *Arctic* seeking for whales, and finding them plentifully, that his knowledge of the "ways" of the ice must be of great advantage to the expedition of which he is second in command.

To those who wish to have a full and accurate idea of how the whale-fishing is prosecuted at the present day, we recommend this delightful narrative, which we should think is likely to become an established favourite with boys. There is a wonderful amount of information packed into the small volume concerning the regions visited, the nature of the ice and icebergs, currents, coasts, natives, fauna, flora, &c. He visited some of the spots rendered classical by former explorers, and actually